Consolidation and Business Strategies in the Securities Industry: How Securities Exchanges Create Value?

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Abstract

The exchange industry had undergone in last years a process of rapid change starting with the listing of major exchanges. Technological developments and regulatory reforms contributed to the falling of national trade barriers and gave rise to growing competition which forced incumbents to react with cross-border mergers. The consolidation process in the securities industry followed a pattern of heterogeneous mergers aimed both to widen liquidity and diversify the business model. This would give rise to cost and revenue synergies leveraging on the joint use of common trading platforms and the development of cross selling opportunities, respectively. Nevertheless, mergers hide some threats as cuts in earnings and cash flows due to increasing competition may adversely affect goodwill and the capital base for exchanges going forward with sizable acquisitions. Governance arrangements at securities industry level turn also to be redefined, giving rise to widespread links between operators which may undermine the full exploitation of expected synergies. These developments have implications for regulators which are required to favor conditions for fair mutual access to exchange services between different jurisdictions in particular at a transatlantic level.

Keywords: Exchange industry, Mergers, Value, Governance, Performance

1. Introduction

A growing field of research engages in studying exchange governance and the incentives that led exchanges to change their governance structures. However, contributions of a certain systematic nature, which analyze the implications, are lacking. The way in which exchanges operate and compete is rapidly changing in connection with the listing of major exchanges and an extensive process of consolidation which contributes to reshape the exchange industries' structure.

It is well recognized in literature that growing competition in the industry forces stock exchanges to increase their market shares via an increasingly more intense consolidation process. On the other hand, the nature of profit maximizing companies of major exchanges leads to the integration of new value-generating activities. From an economic perspective, by expanding their scale exchanges pursue cost efficiencies whereas the exploitation of economies of scope is aimed to stabilize exchanges revenues. This process is also urged by the need to keep up with technological developments, increased competition from peers and internalization of activities of large institutional investors.

Although there is no strong empirical evidence, businesses such as derivatives trading has traditionally been viewed as a counterweight to cash trading as derivatives transaction volumes tend not to be adversely affected by declines in equity trading. Other businesses in which exchanges are engaged such as data dissemination are generally not adversely affected by the cycles in trading volumes. However, the business model isn't the only factor affecting perspectives of exchanges. Another important factor is related to the network of relations between exchanges which entail an important role for regulation.

The aim of this paper is to examine changes in business models of exchanges as consolidation goes forward and their effects on industry structure and competition. This would permit us to identify opportunities and threats for merging exchanges in catching up with the challenges stemming from competition. Our findings show that groups combining product and geographical diversification could be more able to face declines in market activity but this would not always be the case. We try to identify the features that distinguish mergers which comply with a coherent competitive

strategy. The methodology we employ first looks at multiples at which recent mergers in the exchange industry took place; then we identify major economic and financial drivers for exchange value and examine past performances as well as future sustainability. Finally, analyzing future perspectives and threats for exchanges we try to understand if mergers in the exchange industry are value accretive.

The work is organized as follows. Changes in governance and, in particular, incentives for exchanges to list, are looked into in paragraph 2. Paragraph 3 deals with the issue of what are exchanges actually worth on basis of multiples observed in most recent mergers. Paragraph 4 discusses both the value drivers for stock exchanges and the risks they are exposed to. Paragraph 5 looks into the exogenous influences on corporate governance and, in particular, the relationships between regulation and governance of the networks. Paragraph 6 concludes.

2. Governance reforms and incentives to consolidation in the exchange industry

In recent years, most security markets have experience fragmentation which changes the concept of trading securities as traditional stock exchanges are no longer the only venue for buying and selling securities. Now trades could be done on new trading venues. Large intermediaries develop their own proprietary trading platforms. Increasing competition in the securities industry led to substantial changes in exchange governance, starting with demutualization and subsequent listing of most exchanges. A new field of research dealing with incentives for exchanges to change their traditional status complemented the traditional literature which focuses on microstructure issues.

As it was pointed out, there were both strategic and technological reasons underlying the demutualization process. On the one end it has been argued (Steil, 2000; Steil & Aggarwal, 2002) that the most important case for exchange demutualization was the need to reduce the control of local intermediaries over the strategic positioning of exchanges. To the extent that the exchanges seek to serve the needs of a great variety of stakeholders, the focus on the maximization of utility of locals becomes too limitative (Note 1). This idea seems coherent with recent developments in the exchange industry; for example, the Nyse decided to respond at increased competition by merging with Archipelago into a demutualized listed group.

On the other end, technological development contributed to the falling of monopolies by eliminating geographical barriers and promoted competition by fostering product and process innovation (Domowitz & Steil, 1999) (Note 2). Moreover, as national boundaries are blurring restrictions for issuers to list abroad are falling as well (Macey & O'Hara, 1999). This, in turn, redefines the incentive structure for stock exchange management.

The aforementioned developments put a great pressure for exchanges to list (Note 3) and to negotiate alliances in order to cope with increasing competition in trading services. What is new is that exchanges are exposed to even greater competitive pressures form Ecn's that with their efficient technology endowments are able to take away important streams of liquidity from exchanges.

Stock exchanges respond to increasing competition by negotiating alliances, investing in technology and diversifying their business model.

Generally speaking, alliances may consist in simple co-operation agreements between legally separated entities or involve mergers between one or more exchanges. The most recent changes in the securities industry structure followed a pattern of strong integration characterized by mergers. The economics of stock exchanges are affected by the cyclical dynamics in trading activity. Since trading revenues, at list in cash markets, are function of trading volumes, this has consequences on revenues and margins. To this end, exchanges tend to counteract this dynamics in trading revenues pursuing integration strategies both on an horizontal and vertical scale (see Grossman & Hart, 1986; Shy & Tarkka; 2001; Tapking &Yang, 2004).

Exchange mergers almost in all cases involve a widening of the business model and are targeted to exploit economies of scale, economies of network and cross selling opportunities as well. Merging exchanges share common trading platforms in order to enhance liquidity. Since the cost structure of exchanges is characterized to a great extent by fixed costs average costs tend to decrease as liquidity increases. Enhancing liquidity becomes crucial for promoting attractive conditions for intermediaries and issuers (Note 4) and keep up with investments in technology. Now, this is both a problem of competition and coordination. Competition should be promoted since users should have the right to access all the services related to exchange trading, choosing for each the provider offering better conditions (Note 5).

The incentive to improve revenues and margins is the key driver for business diversification. Here the ratio is to engage in high-growth businesses with a limited correlation to cash markets in order to lower volatility of revenues and margins. To this end, derivative trading is traditionally seen as counterweight to cash trading but also post trading services experienced fast growing revenues and profitability. Moreover, investors and issuers could now access more easily than in the past a wider pool of liquidity so as it becomes more difficult for exchanges to retain control over investors. Since maintaining the competitive advantage in the securities industry depends on the ability of exchanges to strengthen their relations with clients, gaining access to a wide set of business areas qualifies as a strategic goal. As a result, major exchanges not only manage trade execution services but provide to users a wide set of services related to the investment in financial products. The business diversification may come about over various dimensions characterized by various degrees of complexity:

a) Integrating data dissemination services and market analysis characterized by close connection with the typical output of the exchange (the prices), thereby benefiting from the obvious economies of scope;
b) Integrating activities, such as the development of screen-based platforms, which do not fall within the production chain of the exchange industry in a strict sense;
c) Integrating services which are complementary to the traditional cash trading such as the organization and management of derivative financial instruments markets;
d) Extending the business perimeter by means of the integration of clearing and settlement services, positioned downstream from the production chain of the exchange industry.

The most recent wave of consolidation involved major global exchanges embracing different jurisdictions (Note 6). Almost in all the cases mergers involved heterogeneous exchanges as for business model, geographical extension, governance arrangements and trading volumes (Note 7). Whereas homogeneous mergers involve similar exchanges as for business model but with complementary geographical location, heterogeneous mergers are aimed to leverage both on geographical and product (or process) complementarities. Recent evidences, however, prove that product and process diversification tend to assume major relevance. The conglomeral organization, within this framework, can be traced back to two schemes:

a) a holding company which controls the companies involved in trading (management companies) and in complementary businesses (central custodians, technology providers) (Note 8);
b) the same exchange which heads up the companies operating in the complementary businesses.

Traditionally, securities exchanges operated through three main business models. There were few global exchanges (i.e. Nyse, Nasdaq and London Stock Exchange) who attracted intermediaries and issuers from all over the world, many regional exchanges focused on their country or region and drawing their clientele primarily form regional investors and issuers and diversified exchanges. The recent wave of mergers in the securities industry gave rise to very diversified groups so as it is difficult to identify a well defined business model (Note 9).

Few global exchanges with a different degree of business diversification emerged which reinforced their oligopoly position in the cash trading and, at least, in one other business line or market segment (which could be derivatives trading or post trading services). It is, however, on derivative trading that the phenomena assumes the major extension.

Derivative markets appear to be more concentrated then cash markets and more heterogeneous as products traded. Here, major players tend to concentrate on few trading segments. According to the World Federation of Exchanges' (Wfe) statistics, few groups with international extension control roughly 70% of Wfe members' equity trading volumes. In Europe, the two main exchanges counts for 73% of volume of share traded. In Us, Nyse Euronext and Nasdaq have, respectively, 46% and 50% of market share on equity trading. Deutsche Börse diversified its business on a transatlantic scale like Nyse Group but focusing on derivatives; with the recent acquisition of the International Securities Exchange became a global exchange at least in the derivative trading, holding a dominant market share in Europe equity and index derivatives and in Us equity derivatives (Table 1).

<Table 1 about here>

As long as exchanges become involved in businesses characterized by a strict connection with trading activities they turn out to reinforce their control alongside the securities industry value chain. However, the implications for the economics of exchanges are not clear. Extensive research analysing efficiency of conglomeral exchanges is lacking. Few works addressed the issue of efficiency for multi-business exchanges. The results are affected by the concept of efficiency adopted and do not provide definitive insights on this issue (Note 10). Nor the threats for traditional exchanges deriving from new competitors have been extensively studied. The phenomenon is recent at least for European markets. However, high speed trading platforms operated by Ecn's proved to succeed in capturing wide streams of exchange order flow. This development underpins a substantial change in the way in which securities exchange compete. Now it becomes even more compelling for exchanges to devote resources in improving efficiency and the quality of their services since liquidity could be no more took for granted.

3. Measuring value in exchange mergers.

Consolidation strategies and new business models oriented toward a wide geographical and product diversification raise the question on what are exchanges worth. Merging exchanges raise the issue of combining shareholders' interests and those of users to the extent that involves the problem of disgorging effective synergies from the combination while assuring users fair access too all trading-related services alongside the securities industry value chain. In particular, the pricing issue turns to be a great deal when the merger involves a diversified exchange so as the evaluation of a variety of business activities proves to be difficult and subtends risks of miss-pricing.

As securities exchanges started to move forward with an intense merging activity the issue of measuring value became of particular importance. It is reasonable to assume that value drivers for exchanges are linked to the business model, which affects the degree of volatility in revenues, the market share that the exchange holds within each business unit and the expected developments in market structure.

The business model affects both the stand alone value and the expected synergies from the merger. Almost all the mergers were expected to generate great cost synergies deriving from integrating trading platforms and revenue synergies stemming from economies of network and the exploitation of cross-selling opportunities.

The issue of measuring value in mergers is strictly dependent on the assumptions underlying the expected synergies and their effects on pricing. Exchanges merge in order to strengthen their market share. Notwithstanding, the greater complexity in the securities exchange industry implies greater pressures on trading activity and threatens the full exploitation of synergies. Our purpose is to try to identify the main assumptions implied in the pricing of merging exchanges and how the business model of exchanges affects the pricing.

Generally speaking, the problem of what are exchanges actually worth is one of difficult solution, above all for conglomeral exchanges. An useful start point would be relying on the analysis of multiples (Table 2). Starting in 2005, we observe an intense merging activity in the exchange industry. Segmenting stock exchanges by business activity and geographical location we can draw some interesting considerations.

<Table 2 about here>

Analyzing multiples in recent deals some interesting considerations can be drawn. In particular:

a) Us exchanges trade at higher multiples then European competitors. Moreover multiples are higher among derivatives exchanges. Since the deals examined for the United States mainly concerned derivatives exchanges, we have to conclude that the market values more derivatives business than cash trading markets. Accordingly, exchanges for which derivative business counts for a great fraction of total revenues should be valued at greater multiples;
b) It should be taken into account that most recent developments within the securities industry witness the extension of the consolidation process at level of post trading organizations (Note 11);
c) some deals seemed to reflect more complex strategic arrangements rather than a pure investment decision. At this regard, the purchase of 28% share capital of Lse by Dubai Exchange at a 62x Ev/Ebitda multiple is paradigmatic;
d) multiples at which recent deals had been settled, far exceed average multiples of European securities exchanges in the last years. Taking into consideration the data for the period 2002-2007, main exchanges traded at average Ev/Ebitda multiples ranging from 10x to 11x.

Now, assessing the congruity of pricing doesn't appear an easy task since conditions are changing over time. However, comparing the implied multiples in main mergers some interesting findings emerge. As reference, we consider the London Stock Exchange (Nasadq bid), the Nyse (Nyses' bid for Archipelago), Euronext (Nyse Group bid) and Borsa Italiana (Lse bid). Table 3 compares the valuation of exchange target with the estimated value on basis of the multiples for comparables and comparable transactions respectively.

<Table 3 about here>

At the announce of the Nyse-Archipelago merger, the former was valued at 69% premium against the Nyses' estimated value applying the implied 19,5 Ev/Ebitda multiple in the Nasdaq offer on Lse. When the two companies issued the joint prospectus the implied premium was 30% on seat price which corresponded to a 37x Ebitda multiple.

It is worth noting that the Nasdaq offer for Lse valued the latter at lower multiples than those applied to the generality of mergers and slightly more the share price of Lse on the date of announcement. The LSE's management rejected the bid on the basis that the price offered was only just equal to the company's stand-alone value. Weather was the Nyse overvalued or the Lse undervalued is arguable. There is no doubt that the exchange industry relied on a great extent on mergers and that the concept of relative value is changing over time.

In the Nyse Group-Euronext merger, Euronext was valued 23.5 times Ebitda margin corresponding to a premium of 31% (Note 12) on Euronext share price immediately before announcing the deal. It is just worth noting that Nyse offer on Euronext included a 17% premium price over the average Euronext share price registered in the thirty preceding days, whereas the average premium price in similar transactions was 12.1%. Analysts valued Euronext in a range comprised between: a) 67.27 € and 72 € applying the method of comparables; b) between 84.15 € and 91.26 € according to comparable transactions.

Borsa Italiana was valued, in the merger with London Stock Exchange, 1,1 billion euro or 14.3 times Ebitda margin, with an implied value of 100.7€ each Borsa Italiana share whereas the book value of Borsa Italiana was 19€.

Now, it is difficult to make comparisons between multiples in different transactions. In fact, varying business models across exchanges make it difficult to identify comparable peers and to understand the assumptions underlying those multiples. Two problems arise referring to the estimation of value for diversified exchanges and the estimation of synergies in heterogeneous mergers respectively.

For exchanges operating with a diversified business model the issue to deal with refers to the contribution of each business area to the exchange value. Considering the exchange as a portfolio of activities, exchange value could be expressed as the sum of estimated values for each business area on basis of the multiples ordinarily observed for each business unit.

Using this methodology, we estimated the stand alone value for Euronext and Borsa Italiana at time of the merger with Nyse Group and Lse respectively (Table 4) (Note 13). Table 4 contains an estimate of synergies as well. The pro forma value of NyseEuronext and Lse Group is also presented, with the allocation to Euronext and Borsa Italiana shareholders respectively.

Estimating expected synergies is subject to even more degrees of uncertainty as regards both the identification of their sources and the estimation of an appropriate discount rate that takes into account the risks stock exchanges are exposed to. This task is made more difficult by the rapid structural changes taking place in the stock-exchange industry, which reduce the level of future certainty. There is no doubt, however, that recent merges have been settled at prices implying high cost and revenue synergies suggesting that the securities industry relies on a great extent on consolidation in order to improve profitability of stock exchanges.

<Table 4 about here>

The case for Borsa Italiana is interesting. Lse offer seems to overestimate the value of the Italian exchange. Really, such a conclusion requests to define the relative value of an exchange1 (Note 14). At the time of Lse-Borsa Italiana merger the magnitude of competitive pressure was, probably, not fully understood, leading to valuation overestimating exchange values and potential synergies as well. Evidences, however, suggest that mergers in the exchange industry present great opportunities but also threats.

Actually, recent years constituted an era of fast growing revenues and margins among stock exchanges, especially those listed. Whether this growth rates could be defended by incumbents in the future remains, obviously, uncertain.

4. Value drivers and risk factors for exchanges

Now, turn to the issue of identifying value drivers for exchanges. We examine recent performances of exchanges, then we draw some considerations upon future perspectives on basis of their business models.

The competitive advantage for stock exchanges depends on the combination of three factors referring to:

a) business model, which affects the volatility of revenues. The more exchanges diversify their activities, the less their revenues are volatile;
b) governance arrangements which affects the incentives for company's management. Obviously, incentives are very different for listed exchanges rather then mutual exchanges. Moreover, it is worth noting that the shareholder structure of listed exchanges is dominated by institutional investors with widespread geographical diffusion1(Note 15);
c) liquidity, both referred to volumes traded and number of issues admitted to trading.

However, identifying the sources of competitive advantage and value drivers in the exchange industry is not so simple. As a result of an intense merging activity in the last years major securities exchanges progressively expanded the scope of their business integrating business areas whose weight on total revenues is increasing but whose contribution to exchange value may turn to be uncertain. Now they are organized as groups competing in all business areas related to trading.

At first instance, exchange value depends on revenue base and cost structure. Revenue function differs across the various business units. For instance, revenues in cash equity markets are function of trading volumes whereas in derivative trading are, generally, function of number of contracts exchanged. Three types of revenues fall within the category of service revenues, linked, respectively, to post trading business (clearing, settlement and other post trading revenues), the distribution of market data and the sale of IT solutions.

Table 5 shows the weight of different revenue sources for major stock exchanges. Us exchanges still rely on cash trading revenues. By contrast, European exchanges traditionally have a more diversified business model. Deutsche Börse achieves the maximum level of diversification with the traditional sources of revenues (listing and cash trading services) being negligible on total revenues. Despite the merger with Borsa Italiana, London Stock Exchanges still derives a substantial part of his revenues from traditional businesses.

<Table 5 about here>

Revenues show a strong positive correlation with trading volumes. In derivative markets both treading volumes and revenues showed a pattern of fast and continuous growth. Derivative trading revenues constitute a relevant fraction of total revenues for major exchanges. The number of contracts traded has been continuously growing since the last years even during periods of declining trading volumes in equity markets. These patterns give support to the hypothesis of weak correlation between cash markets and derivative markets. Exchanges combining cash and derivative trading would, therefore, succeed in the attempt of lowering volatility of revenues.

By contrast, the cost structure shows a weak correlation with trading volumes reflecting the predominance of fixed costs in the cost function of exchanges. This rigidity is only attenuated in some exchanges (in particular Us exchanges) which foresee rebates to brokers which are directly connected to trading volumes. Evidences show that increasing volumes have a positive impact on cost efficiency (Figure 1) being paired with a reduction in average costs. This would imply that mergers in the securities industry would potentially benefit of cost economies.

<Figure 1 about here>

Mergers in the securities industry reflect, therefore, the opportunity of exploiting both cost synergies and widening the revenue base. Therefore, the issue of measuring value for securities exchanges should be analysed within a wider framework taking into account both opportunities and threats. Obviously, exchanges' value is strictly dependent on cash flows expectations as other businesses. The oligopoly power grants major exchanges large market shares and growing revenues as a result of product and process diversification. Notwithstanding, they are still exposed to some relevant risk factors both in the core business with reference to their trading volumes and, more generally, in all the stages related to trading along the value chain. This risk refers to:

a) exogenous factors such cyclical downturns in economic activity and increasing cross border competition. In particular, new competitors managing high performing trading platforms put increasing pressures on exchanges' trading volumes and margins;
b) endogenous factors such as the concentration in trading activity. When trading volume is concentrated among few stocks, a company moving to another exchange would cause the exchange loosing an important fraction of his volumes.

As concerns the dynamics in trading activity, in 2008 the worsening crisis caused trading volumes to fall. Adverse market and economic conditions may impact the business of financial services companies which are the main clients of exchanges. It is worth noting that other European exchanges experienced declines in activity during 2008 but with a magnitude which was less intense. Despite one could expect a generalized decline in trading volumes, it could be shown that Us markets still continued to benefit from increasing trading volumes during 2008.

Moreover, even though major exchanges can leverage on a substantial market power the competitive pressures are becoming even more intense. New competitors are emerging which prove to be successful in capturing large shares of exchanges' order flow. Well known in the Us markets, this phenomena is now emerging in Europe. Far away from being only potential, the competition from new trading venues is becoming even more real, proving that trading environment is becoming more dynamic than in the past. It is just to consider the case of Chi-x to understand the magnitude of the phenomena (Note 16). Obviously, increasing competition forces exchanges to drop tariffs. For example, LSE announced late in 2008 deep fee cuts (including zero fees for passive executions) and incentives for traders in an effort to fend off competition from new entrants.

Risks for securities exchanges derive from concentration in trading activity as well. According to Wfe's statistics (Table 6), US markets are less concentrated compared with European markets (Note 17).

<Table 6 about here>

Competitiveness of stock exchanges is, therefore, strictly dependent on innovation as for services provided to the customers and technology endowments. As exchanges are now forced to lower costs of operating infrastructures and speed up trading, investments in technology are crucial. By this way, we expect the investments in IT being an important fraction of total costs. Resources which exchanges devote to investments in platforms should become one of the main parameters in valuing securities exchanges. Obviously, this requires strong cash flows in order to support investments and repay debt. To this end, the main drawbacks of the consolidation process can be traced back to the growing leverage of exchanges [Standard and Poor's, 2008]. We assume some ratios as proxy of value drivers for stock exchanges, expressing their attitude to generate adequate cash flows in order to repay debt and support investments.

These ratios refer both to profitability and cost structure of exchanges. As observed, we expect IT costs to be an important fraction of exchanges' total costs. Major exchanges experienced during the last years a pattern of continuous growth in revenues. However, there still remain relevant differences across exchanges as regards profitability ratios and cost structure (Table 7 and 8). These differences can be traced back both to the business model and governance arrangements of exchanges.

<Table 7 about here>

<Table 8 about here>

Analysing economic performances according to different governance arrangements some considerations may be drawn. Reported figures show that:

a) Listed exchanges report higher profitability ratios than traditionally non profit organizations like Us exchanges and devote a higher fraction of their costs to IT investments which appear to have appear adequate coverage in free operative cash flow;

b) by the contrary, Nyse have both a lower incidence of IT costs on total costs and a higher incidence of IT costs on free operative cash flow. However, despite a lower economic efficiency then traditionally listed exchanges, Nyse Euronext EBITDA margin appears coherent with the needs of servicing the debt.

Segmenting by business model, it could be observed that different business lines should be analysed along two dimensions. On the one end, the profitability of each business should be considered. Certain complementary business lines show high profitability ratios. On the other end, their contribution to business diversification should be considered.

<Table 9 about here>

Looking in more detail segment reporting (Table 9), figures don't confirm the dominance of derivative business relative to cash trading activities. Some points should be underlined:

a) pure derivatives exchanges such as Chicago Mercantile Exchange reports high profits. Indeed, Eurex (The Deutsche Börse derivative market) ratios are as high as those of Cme;
b) actually, in some cases cash trading business margins match derivative ones. Deutsche Börse cash segment (Xetra) reports high profitability margins. However, Deutsche Börse cash trading services have a marginal involvement in group's revenue generation. London Stock Exchange, traditionally focused on cash trading services, reports high growing margins. However, it is a matter of fact that high growth derivative business constitute a great case for stock exchanges to diversify;
c) as regards complementary businesses, figures show high margins from post trading activities such those of Deutsche Börse Group and London Stock Exchange Group. However, Lse post trading activities have a marginal involvement in group's business model. Distribution of market data appears less profitable than trading business.

However, competition in market data business may induce significant contractions in activity which would be a concern especially for those exchanges deriving a relatively relevant fraction of their revenues from data dissemination. Here the competition from big data suppliers becomes even deeper. In 2007, Thomson agreed to buy Reuters creating the world's leading provider of news and data for professional markets.

The most interesting case is the conjunction between cash trading services and derivative trading services. Recent evidences seem to confirm such intuition. Number of contracts traded showed in the last years a sharp increase in growth rates across major derivative markets, with the tendency continuing in 2008 during financial turmoil. This would support the idea of derivatives as a counterweight to cash trading. This would imply that mergers with derivative exchanges would be value accretive for cash markets. However, this conclusion is not so clearly supported by observed performances of exchanges. In fact, pure cash markets in some cases experienced profitability ratios that could be compared to those of major derivative markets.

In any case, in the new competitive framework it seems to be difficult for exchanges to preserve recent high-growing rates of profits. The pattern in share prices during the last two years appeared to foresee accrued risks for exchanges. After a period of steep rising in share prices a sharp decline starting end 2007 forecloses an expected decline in exchanges' profitability. Yet, the decline started before the deepening of the financial turmoil. It is interesting to observe, during 2008, the contrast between exchanges reporting increasing trading activity and falling share prices. This patterns obviously reflect the difficult scenario stemming from the financial turmoil but also seems to foreclose a more generalized uncertainty about futures developments in the exchange industry and sustainability of past growth rates.

Should the exchanges experience cuts in profits' growth rates, this would cause pressures that go far beyond the support of investments. In merging exchanges with a high incidence of intangible assets events such as declines in stock prices and market capitalization, reduced future cash flow estimates and slower growth rates in companies' business may induce relevant impairments. It is obvious that high impairments may threaten the capital base of exchanges.

The equity base plays an important role in exchanges both from a quantitative but also a qualitative point of view. Credit rating agencies adopt a restricted equity measure expressed by the Total Tangible Equity, obtained by deducting goodwill and intangibles from reported equity. For exchanges moving forward with sizable acquisitions such measure is often severely negative. Both Nyse Euronext and Lse Group reported, in the last financial report, operating losses due to goodwill impairments (Note 18).

Obviously, it is difficult to evaluate the sensitivity of exchange's value to these events. It is also reasonable to assume that sensitivity to risk factors would vary across different business segments (Note 19).

A coherent business diversification, within this context, may help to reduce uncertainty and to exploit interesting opportunities. Notwithstanding, in some circumstances, the complexity of relations within the exchange industry may hinder the full exploitation of all potential benefits from business diversification.

As seen, in some business areas revenues are less dependent on volumes. Derivative trading, data dissemination and post trading services appear not to be conditioned by declines in trading turnover.

As for post trading business new interesting developments are emerging. Far from being a mere complement for core business it is assuming an even more strategic importance. From recent financial turmoil we learnt that market crisis may turn to be opportunities for stock exchanges. Let think about regulators' pressures to expand the use of clearing in Otc markets in order to strengthen the financial system. It not would be surprising that Lch-Clearnet has become one of the most prized assets in the post trading business given its consolidated position in the clearing of Otc trades. Besides, it is not surprising that LSE was part of a consortium considering making a cash offer for Lch-Clearnet.

Geographical diversification may share the same opportunities as regards revenues stabilisation. Here, the most interesting case refers to transatlantic integration. The case of Nyse Euronext is of particular significance. The group derives 37% of his revenues from European operations and 63% of total revenues from Us operations. Geographical diversification becomes crucial in order to improve the ability of exchanges to attract liquidity. Indeed, this would eventually counterweight declines in trading volumes in one market with increases in other markets.

However, just diversifying the business model doesn't suffice in order to extract value. It is real the risk to overestimate the contribution of the exchange target to group's profits.

For example, Borsa Italiana contribution to Lse group's total liquidity appears not to be coherent with the pricing of the Italian exchange in the merger. Other businesses meet some constraints that could hinder group's efforts in extracting synergies. Derivative business contributed by Borsa Italiana doesn't have both volumes and international extension as large competitors. By the way, recall that Lse yet has a joint venture in derivative business with Omx. In post trading business interesting opportunities are subtended since Borsa Italiana's activities in this segment could leverage on the large liquidity pool of Lse. However, Lse has relevant interests in Lch-Clearnet being a shareholder represented in the board. This is a governance matter which poses a constraint in fully extracting synergies from Borsa Italiana's post trading business.

5. Exchange mergers and industries' governance: the role of regulators.

The recent wave of mergers contributed to reshape the exchange industries' structure and, above all, to change the concept of governance itself. Within the new framework key drivers for the competitive advantage of exchanges are related to operating trading platforms. Mergers among exchanges have important implications for industry's structure reducing the number of trading platforms. The merger between Nyse Group and Euronext led to a reduction from six to three platforms. In this way, merging exchanges share the same platform and represent distinct points of access to a common pool of liquidity. By the way, this results in a reshaping of the exchange industry morphology and implies the strengthening of relations between market operators.

Exchange mergers generate opportunities because trading volumes are increased and costs are consequently reduced. Moreover, product diversification creates further opportunities by stabilising revenues and developing synergies. However, stock-exchange pricing raises a number of problems. There is a suspicion that opportunism may be behind many of the deals. Some major shareholders of exchanges embark on merger and acquisition operations out of strategic interest. Often the value of the acquired exchange is overstated.

Our findings suggest that product diversification, in particular combining cash and derivatives markets, could improve economic performances of exchanges by leveraging on business complementarities. However, not always exchanges mergers appear to be have the same potential in achieving all the potentially exploitable synergies. Just considering the merger between London Stock Exchange and Borsa Italiana some governance related matters could prevent the exploitation of programmed synergies.

As a result, the governance structure in the stock-exchange industry has a substantial effect on the outcome of the consolidation process.

Exchange industry emerges even more as a network of securities exchanges. This implies that mergers results in a reallocation of control on assets (infrastructures) characterized by deeper links between exchanges and between these and post trading operators which could impair the ability to better serve the interest of investors. In the new environment, the governance issue is to a less extent related to the conflicts between intermediaries or between insiders and outsiders; instead it reflects more deeply the relations in the exchange industry and is related to the conditions at which investors can buy the bulk of services comprised in the exchange trading.

Our study has raised some implications that should be of interest to the market and regulators. The first reflects the competitive strategies of exchanges, whose interaction helps shape the structure of the industry. These strategies are oriented by regulators' policies which have an important role in calibrating governance mechanisms. It could be argued that governance mechanisms are irrelevant in situations where the exchange has to face strong competition.

Moreover, we claim that the governance issue covers two levels. On an exchange level, the issue of relations between stakeholders has been deeply studied in literature. On a wider level, relations between exchanges should be dealt to. In fact, the nature of incentives and conflicts of interests is now changing at light of growing interdependences between exchanges and post trading infrastructures. Within this framework, governance of networks is assuming growing relevance and cannot be undermined.

Indeed, change in ownership structure is the most problematic issue concerning stock-exchange governance, above all with regard to the listing of exchanges and to the network of interdependence resulting from the consolidation process. Not only should regulation assist the reconstruction of exchange-industry structure, but also promote non-discriminatory access to exchange-industry services.

Obviously this is a field in which strategic goals of exchanges and right of users to access market infrastructures at fair conditions combines. Exchange behaviour is driven by the management engaged in facing competition and seeking to exploit new business opportunities as liberalization of markets goes forward. However, liberalization discloses opportunities not only for exchanges but also for users.

Within this framework, extracting value from consolidation in the securities industry requires for a combination of market forces, governance and institutional arrangements which permit exchanges and users to exploit better business opportunities.

The implications for the functioning of the securities industry can be summed up in three points:

a) it is necessary to find governance mechanisms which combine the business needs of the exchanges with the interests of the users to use services which are valid in terms of quality;
b) as we have seen, since the business choices involve integration between market operators, effective regulations are necessary which govern the functioning of the networks;
c) the matters stated explain why in the case of the stock exchanges the external governance mechanisms such as market and regulation take on particular relevance.

The objective is to render the network effect fully operative, guaranteeing the user ample possibility to access the various operators, eventually acquiring "individual" elementary services from various operators.

This is why in the governance of the stock exchanges it is necessary to go beyond the trading problems as previously estimated (typical outlook of the theory of transaction costs) in order to look into the effects of the transaction between stock exchange and user as finally realized. In particular, it is useful to concentrate on the non-contractual governance mechanisms and, in particular, the effects ascribable to that which in publications is defined as network embeddedness (Rooks, et. al., 2006): among these, the appropriateness for the user to turn to other alternative suppliers (exit network) stands out.

Such an expectation should interest both service users and the actual stock exchanges. Indeed, exchanges have to face the threat of potentially losing their competitive advantage but can benefit from greater business opportunities resulting from cross-border expansion. In practice, non-discriminatory access regulations can be found in the codes of conduct of post-trading companies, as well as in the initiatives directed towards liberalizing access to trading services.

The control of the relationships between stock exchange and users could, alternatively, be left to the free action of market forces under the impetus of the competitive or envisage the more or less penetrating intervention of regulation. For example, regulation could envisage some form of tariff control, limits to the share investments of the stock exchanges in post trading bodies, require forms of administrative and accounting separation between the various business segments or, at antitrust level, place restrictions on the mergers between stock exchanges and/or post trading infrastructures.

The solution which is favorable to the market finds important supporters in literature and inspires the EC legislative system contained in the Mifid to a large extent. It has been highlighted (Fishel & Grossman, 1984) that there is a close relationship between how the exchange is regulated and the trading volumes it manages to attract. The reputation factor (and the threat deriving from the exit network) would, in itself, be suitable for avoiding opportunist conduct.

There is no doubt, however, that in governing relations among market operators it is crucial the role of regulators which should be targeted in promoting competition while preserving minimum standards of investor protection. Here, the engagement of regulators should be aimed to coordinate and liberalise exchanges services since this would benefit both exchanges and users with the former being able to offer their services in other jurisdictions at same conditions as domestic peers whereas the latter would have access to a greater variety of services.

Markets forces driving changes in securities' industry organization need to be supported by a market friendly institutional environment. Obviously this would have relevant implications for regulation. As seen, the incentive of listed exchanges to pursue strategies of external growth in all exchange trading related businesses turn out to reshape the morphology of securities industry.

Fierce competition exposes exchanges to threats but disclose new opportunities as well since these are no longer constricted by national boundaries. In this context, the challenge for regulators is to promote conditions of fair access for exchanges and users to foreign markets. The levelling of the playing field claims for a rethinking of mutual recognition issues. In recent times the Sec proposed a mutual recognition regime among Us and European exchanges (Note 20) for which Sec will negotiate on a case by case basis a regime of substituted compliance with foreign regulators. This mutual recognition regime would be based upon a set of agreed minimal regulatory standards. On this basis, European exchanges and investors would be able to access Us markets without additional regulatory burdens.

6. Conclusions

Consolidation in the securities industry underlies some opportunities related to cost reductions as trading volumes increase. From a strategic standpoint, exchanges are able to expand their offer and control almost all the phases related to exchange trading. Mergers are not only aimed to improve liquidity but also to diversify the business model (ie sources of revenues). Diversifying the business model permit exchanges to stabilize revenues and exploit cross selling opportunities. However, in some cases observed mergers seems to respond to opportunistic goals of controlling shareholders rather than clear economic and strategic needs. In any case, multiples observed appear to overestimate future profitability of exchanges as they become even more exposed to fierce competition.

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Notes

Note 1. The incentive problem is also analyzed in Serifsoy and Tyrell (2007) where it is shown how a mutual exchange, facing competition from a for-profit, outsider-owned platform, can only survive by adopting a similar governance structure.

Note 2. Above all it contributed to diminishing the role of financial intermediaries as it is generally agreed (Mishkin & Strahan, 1999,;Allen, Mc Andrews & Strahan, 2002).

Note 3. Only with the listing is the effective opening up of the share base observed. As it was observed (Fleckner, 2006) the public company model is best suited to meet the challenges of growing international competition.

Note 4. As pointed out by prominent research, the exchanges industry shares the typical features of network industries (Economides, 1993) so as alliances among stock exchanges permit to exploit economies of network, both direct and indirect by enhancing liquidity.

Note 5. In literature, the coordination problem is analyzed in Economides and Flyer (1997) and appears to be related to competition. In fact, since coordination is assured as long as exchanges adhere to common standards (compatibility) and provide equal access to users it is a precondition for a proper competition in the market.

Note 6. This obviously poses interesting implications and entails new challenges for regulators, in particular as regards mutual recognition issues (see Tafara & Peterson, 2007).

Note 7. The most interesting case is that resulted in the formation of NyseEuronext. Traditionally focused on cash trading business, Nyse Group merged with Euronext in order to gain access to European markets and, particularly, to Euronext' activities in the derivative business. Lse presented the merger with Borsa Italiana as an opportunity to leverage on Borsa Italina's activities in the derivative business and post trading services.

Note 8. This, for example, is the case of Euronext where there is a Dutch holding company (Euronext Nv) at the head of the Group which controls the federate management companies (Euronext Paris, Euronext Amsterdam, Euronext Bruxelles and Euronext Lisbon with regards to cash trading activities and EuronextLiffe with regards to trading on financial derivative instruments). The same model is currently used for achieving the integration between Euronext and Nyse, founded on the formation of a holding company (Nyse Euronext) which heads up the Euronext and Nyse Groups.

Note 9. However, we can identify fully vertical integrated exchanges like Deutsche B rse characterized by a strict conjunction between trading and post trading activities and groups leveraging much more on synergies stemming from horizontal integration of exchanges with different geographical location and offering trading services on a variety of securities. The latter is the case of NyseEuronext which differentiates trading revenues across countries and products but is not involved in post trading services.

Note 10. Testing a sample of 28 exchanges on the basis of a non parametric approach based on Data Envelopment Analysis, Serifsoy (2007) finds that exchanges adopting a diversified business model are less efficient compared with exchanges whose business is focused on the traditional cash trading. Other contributions on this topic could be found in Schmiedel (2001) in which economic efficiency of exchanges during the period 1985-1999 is examined and Schmiedel (2002) where the issue of productivity gains for traditional exchanges and diversified exchanges respectively during the period 1993-1999 are dealt with. However, the aforementioned studies cover a time frame characterized by an industry structure far different from today's exchange industry.

Note 11. In 2008, the Depository Trust and Clearing Corporation launched a bid on the 100% share capital of Lch.Clearnet Group at 10 € each Lch.Clearnet share, corresponding to a 2.74x Ev/Ebitda multiple for the company.

Note 12. The merger between NYSE Group and Euronext NV was based on a public takeover bid in which for every Euronext NV share the acquirer would offer €21.32 in cash and 0.98 NYSE Euronext shares. Subsequently, the NYSE Group merged with the new holding company by exchanging NYSE Euronext shares with NYSE Group shares at a value of 1 to 1. On the basis of the share exchange agreement proposed by NYSE Euronext, the French stock exchange's share price was set at €93.06, according to the share price of the NYSE Group on 2 January 2007.

Note 13. To this end, we applied some hypothesis as regards the multiple applied to each business unit. In particular: a) for cash markets we applied the average past multiples for exchanges focused on that business: the London Stock Exchange is assumed as a benchmark; b) for derivative trading services we applied an Ev/Ebitda multiple comprised in the range 19x-27x, corresponding to the multiples at which main derivative markets traded in recent years; c) post trading services are valued according to the implied multiple in the proposed DTCC-Clearnet merger (2.74 x); d) as for data dissemination services, we applied an Ev/Ebitda multiple comprised in the range 12x-17x, corresponding to the past multiples for the major information providers (i.e. Thomson and Reuters); e) for IT services, we applied a 12x-15x Ev/Ebitda range, corresponding to the past multiples for IT services providers for the financial sector such as Fiserv, a Nasdaq listed company; f) due to the low trading volumes of Borsa Italiana when compared to its competitors, a smaller range was applied for the EV/EBITDA multiple.

Note 14. As reference, recall that the value of trading on Borsa Italiana was 74.6 billion euros in July 2008 whereas that on Chi-x was 73,5 billion in the same month. In March 2009 those figures were 45.9 billion euro and 57.1 billion euro respectively. Now, at light of these figures, we cannot conclude that Chi-x is worth more than Borsa Italiana. However, they reveal how relative value has shifted very quickly over time.

Note 15. For example, Deutsche Börse presents a 100% floating capital and a shareholding structure dominated by resident foreign institutional investors, particularly from the Anglo-Saxon financial markets.

Note 16. We just recall the trading volumes gained in Uk securities; at this regard the 25% market share in Ftse 100 stocks could appear straightforward. However, it is worth noting that Nyse has to face increased competition as well (recall that its share of trading in Nyse listed securities declined from 60.5% in 2007 to 45% in 2008). It is clear that if the growth in Nyse overall trading volume does not offset any significant reduction in its trading share, companies' operating results may result adversely affected.

Note 17. For example, the 5% most traded Nasdaq companies (156 companies) accounts for 33.1% of volumes traded on the exchange whereas only 15 companies listed on Borsa Italiana accounts for 83% of volumes traded. The 5% most traded Lse companies account for 97.3% of domestic trading volume, but are represented by 121 companies. This, obviously, would reinforce exchanges' incentives to merge reducing, by this way, the risk of losing turnover.

Note 18. In 2008, Nyse Euronext reported a $ 1,590 impairment of goodwill, driven by adverse equity market conditions that caused a material decline in industry market multiples and lower estimated future cash flows of European reporting units. LSE itself reported a 484 million impairment of goodwill on Italian cash generating units.

Note 19. LSE estimated a negative impact of roughly 17% in value in use of cash trading cash generating unit and 13% in value in use of post trading cash generating unit deriving from a 5% reduction in revenues.

Note 20. See Sec release 2007-105.

Table 1. Market share

	Equity markets			*Equity derivatives*			*Index derivatives*	
	Usa	Europe		Usa	Europe		Usa	Europe
NyseEuronext	45.9%	18.5%	NyseEuronext	17%	22%	Deutsche Börse	-	59%
NasdaqOmx	49.7%	5.6%	Nasdaq (Pse)	15%	-	Cme Group	77%	-
Lse Gropup	-	32.6%	Lse Gropup	-	2%			
Deutsche Börse	-	19.6%	Deutsche Börse	27%	35%			
			Cboe	26%	-			

Source: our elaborations on Wfe statistics (2008).

Table 2. Average Ev/Ebitda multiple in recent mergers

	All deals	*European markets*	*Us markets*	*Derivative markets*
Average Ev/Ebitda multiple	27	25.3	28.5	27.6

Source: our elaborations on financial reports of exchanges and prospectuses related to the mergers considered

Table 3. Exchange value: some comparisons

Bidder	*Target*	*Announce date*	*Implied price*	*Comparables*	*Comparable transactions*	*Share price*
NASDAQ	LSE*	11 April 2006	11.75£	6.26£-13£	14.9£-22.1£	10.3£
Nyse**	Archipelago	19 April 2005	49.3$	11.9-26.9	37.6-48.3	-
Nyse Group	Euronext***	19 May 2006	92.5€	63€-74.8€	74.8€-102.4€	65.2 €
Lse	Borsa Italiana****	23 June 2007	100.7€	111.3€-132.1€	132.1€-180.9€	19 €

Source: our elaborations on exchanges' annual reports and prospectuses. Share price: for Lse is intended at the announcement date whereas for Euronext reflects the average price on 30 days before announcement. *Comparables: we assume the 2005 NASDAQ and Deutsche Börse EV/EBITDA multiples. Comparable transactions: an EV/EBITDA range of between 25 (average multiples of transactions announced in 2005) and 37 (the NYSE's multiple) is assumed. ** Comparables: an EV/EBITDA range between 9 (LSE multiple in 2004) and 20 (average NASDAQ multiples) is assumed. Comparable transactions: an EV/EBITDA range between 19.5 (NASDAQ bid for LSE) and 28 (average multiple of deals involving American exchanges as target) is assumed. ***and**** Comparables: an EV/EBITDA range between 16 (LSE multiple in 2006) and 18 (Deutsche Börse multiple in 2006) is assumed. Comparable transactions: an EV/EBITDA range of between 19.5 (the lowest multiple for transactions announced in 2006) and 26 (average multiple of all 2006 transactions) is assumed.

Table 4. Estimated post merger values for NyseEuronext and Lse Group

	Low	*High*		*Low*	*High*
Euronext stand alone value (€ per share)	59.5	62.1	Borsa Italiana stand alone value (€ per share)	55	67
Eurnext market capitalization (€)	7.4	8.7	Borsa Italiana market capitalization (€)	0.9	1.1
NYSE Group market capitalization (€)*	9.1	10.4	LSE market capitalization (€)*	5.2	6
Synergies**	3.4	3.4	Synergies**	0.6	0.6
NYSE Euronext pro forma value***	17.5	20.1	LSE Group pro forma value	6.7	7.7
Value for Euronext shareholder****	9.6	10.6	Value for Borsa Italiana Shareholder****	1.8	2.2
Premium on stand alone value	29.1 %	21.6 %	Premium on stand alone value	105 %	100 %

Our elaborations. Data are expressed in billions of € except for per share prices.
* The estimate for NYSE Group value is based on an EV/EBITDA multiple ranging from 23.5x to 27.5x. The estimate for LSE value is based on an EV/EBITDA multiple ranging from 19 to 22. **We estimated synergies assuming a P/E multiple of 25 at a 10 per cent discount rate. Such were the parameters adopted by the NYSE and Euronext when estimating the effects of synergies on value. *** Comprises 2.4 billion € of cash distribution. **** Euronext shareholders held 41 per cent of the post-merger group's share capital. Borsa Italiana shareholders had a right to 28 per cent of the resulting group's share capital.

Table 5. Revenues of the stock exchanges by business area

	Cash trading	*Derivatives trading*	*Services*	*IT*
NyseEuronext	64.9%	14.1%	13%	3.4%
Lse Group*	62.3%	-	34%	2.3%
Nasdaq Omx*	97%	-	-	3%
Deutsche Börse	12.3%	41.1%	42.7%	3.9%

Source: our elaborations on financial reports (2008). For Lse, the financial year ended march 2009. Derivative revenues not available.

Table 6. Market concentration

	5% Trading Volume	*Number of companies*
	US Exchanges	
Nyse Euronext	30.3%	95
Nasdaq Omx	33.1%	136
	European Exchanges	
Borsa Italiana	83.2%	15
Lse	97.3%	121
Euronext	63.3%	44
Deutsche Börse	51.1%	39
Omx Exchanges	78%	41

Source: Wfe statistics (2008). The table shows the part represented by 5% of the most traded domestic shares compared to domestic share trading value.

Table 7. Financial ratios and cost structure for major exchanges

	Leverage (%)	*Ebitda (%)*	*Ebitda/Interest coverage*	*Debt/Ebitda (%)*	*Focf/Ebitda (%)*	*IT Costs/ Total Costs (%)*	*IT Costs/ Focf (%)*
Nyse Euronext	44.3	26.7	8.4	188	57.4	6	44
Nasdaq Omx	46.9	20.1	8.5	472	55.6	6.6	13.3
Lse Group	45.4	55.9	5.7	157	60	-	-
Deutsche Börse	53.4	59.1	5.9	550	77.7	9.1	9.4
Cme	37.2	71	32.1	608	65.8	11.4	9.4

Source: our elaborations on exchange reports (2008). Data on It costs and total costs for Lse are not available.

Table 8. Some performance measures

	2002	2003	2004	2005	2006	2007	2008
			Ebitda (%)				
NYSE Euronext	-	40.4	34.7	9.0	15.6	27.9	26
LSE Group	39.4	44.2	45.3	51.4	53.1	61.7	55.8
Nasdaq Omx	25.5	5.5	15.6	20.5	17.2	16.6	20
Deutsche Börse	34.9	39.4	39.6	46.8	54.8	55.2	59
Chicago Mercantile Exchange	43.5	47.3	56.4	61.1	63.7	67.7	71
			Eps ($)				
NYSE Euronext	-	0.52	0.26	0.35	1.38	2.72	Neg.
LSE Group	0.29	0.39	0.46	0.48	1.07	1.45	1.1
Nasdaq Omx	-	-	-	0.68	1.22	4.47	1.7
Deutsche Börse	2.06	2.50	2.96	4.96	4.25	6.46	7.5
Chicago Mercantile Exchange	3.24	3.74	6.55	8.94	11.74	15.05	12.5
			Operative cash flow per share ($)				
NYSE Euronext	-	-	-	-	1.37	2.64	2.63
LSE Group	0.47	0.65	0.56	0.85	1.34	1.28	1.21
Nasdaq Omx	-	1.34	1.49	1.08	1.39	1.14	2.01
Deutsche Börse	4.12	5.40	4.89	8.61	5.36	5.96	9.36
Chicago Mercantile Exchange	4.8	5.8	9.8	10.1	13.5	15.2	18.02

Source: Our elaborations on financial reports.

Table 9. Segment reporting

Ebitda (%)	*Cash markets*		*Derivatives markets*		*Post Trading*		*Data dissemination*	
	2007	2008	2007	2008	2007	2008	2007	2008
Deutche Borse	59.8	56.7	64.4	65.2	55.3	66	50.7	56.7
Lse Group	66.8	56.1	-	-	64.3	63	59.1	57.1
Cme	-	-	43.5	71	-	-	-	-

Source: our elaborations on exchange reports (2008).

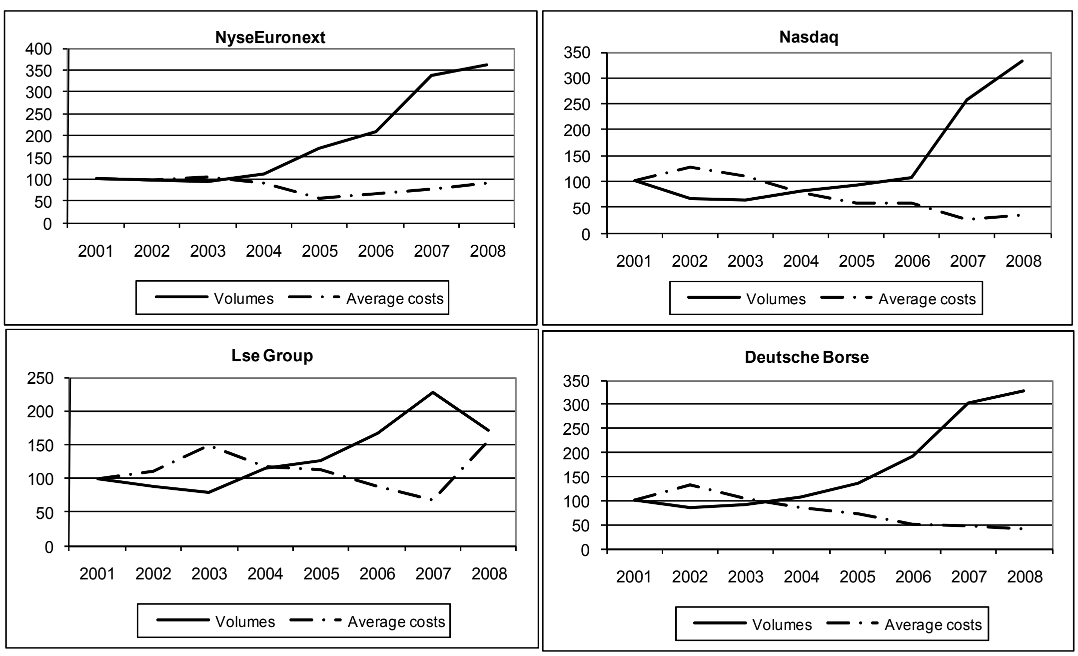

Figure 1. Volumes traded and average costs in major exchanges